

LIFE-CYCLE PLANNING FOR KNOWLEDGE MANAGEMENT

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Introduction

Life-cycle planning is essential for the implementation of knowledge management (KM) efforts. Many KM efforts start with an information technology solution in mind and proceed with the concept, "If we build it, they will come." This approach fails to consider the user community's tendency to avoid change unless there is a clear and driving rationale. However, careful life-cycle planning, with full consideration of all the important components of KM, will significantly enhance the chance of success. The following five factors are cited in most literature as important components of KM efforts: leadership, culture, business process, performance measurement, and information technology.

KM experts contend that if more than 25 percent of any effort involves information technology, it cannot be considered as a KM effort. The other components will typically consume a majority of the resources in a successful KM effort.

This article describes lessons learned from a case where a knowledge management system (KMS) was developed and implemented, with a significant level of effort focused on changing the culture and business processes. This change required a large amount of time and resources to convince people to accept the system as a useful tool and to use it to the maximum extent.

P3L KMS

The P3L (People, Product, Publication Locator) KMS—also called TIPS (Technology Information Products and Services)—was developed to help research and development laboratory customers locate information regarding expert scientists and to search products and publications produced at the Construction Engineering Research Laboratory (CERL), U.S. Army Engineer Research and Development Center (ERDC), Champaign, IL. The P3L provides an excellent way to help customers find solutions to problems. It also suggests names of experts for additional advice and consultation. For example, a customer can ask about drinking water problems at Camp Zama and receive the names of experts with potential answers to this question, as well as what publications are available regarding this issue.

The P3L also encourages researchers to share knowledge on product development and publications and serves as a common point of publication storage, thus enhancing a researcher's ability to find relevant literature. The P3L supports researchers by simplifying business processes, implementing standard corporate Web pages for various research topics, eliminating redundant data calls, and increasing accuracy of current data. The system allows researchers to update their own data and supervisors to approve changes for researchers

they supervise. This capability is password-protected.

Background

The initial system was developed to enhance communication between researchers and customers as well as among researchers involved in environmental conservation activities and publications. Subsequently, program managers in other business areas recognized the value and benefit of P3L and requested it be expanded to include all CERL business areas. As the system was modified to include other business areas, the implementation plan was developed, including training and a business process change.

In February 2000, an initial training session was conducted for 15 supervisors who would review and approve resumes, products, and publications. Training sessions continued until March 2001 to teach 200 researchers how to enter their resumes, products, and publications into the P3L. Currently, all researchers and supervisors are trained, and their data are entered into the system. It took more than a year of encouragement by supervisors to have all researchers committed to entering and updating their data.

Change Of Business Process

A change of business process for publishing internal technical reports that are generated by research projects helped encourage the entry of new publications. Today, the only way for a researcher to get approval of a publication is through use of the P3L. Thus, all new publications are captured into the system, and the electronic file of the report is saved under the appropriate business area and the author's name. This is an improvement over the old manual process where a memo for approval or a report document was sometimes lost, thus delaying the publication and causing researcher frustration.

Leadership Commitment

Top management support and commitment was essential to the system's success. From system implementation, CERL's Director was a strong proponent and allocated enough funding to conduct training and system enhancement. This ensured that the system worked reliably and provided

users with help-desk type support. Without top management's commitment, funding becomes a difficult issue. Without funding, a system cannot be maintained with the appropriate level of help-desk support.

Knowledge-Sharing Culture

Today, organizations often hire smart people and then overload them with tasks, leaving them no time for conversation and little time for thought. Knowledge is transferred in organizations regardless of whether the process is managed. When one computer programmer asks another if he/she has encountered and solved a particular problem, the second programmer will share that knowledge. These natural knowledge transfers are part of organizational life. However, they are fragmentary. The larger and more complex an organization, the greater the chance that the knowledge needed exists somewhere in the organization, but it may be difficult to find. Spontaneous, unstructured knowledge sharing is critical to an organization's success.

Outdated industrial-age theories of the nature of work influenced management to assume that water-cooler socializing is a waste of time. However, most water-cooler conversation is work-related, even though some of the talk is about sports and the weather. People talk about current projects, they bounce ideas off one another, and they can get good advice on how to solve problems. Their conversations are work. In his article "What's So New About the New Economy?" in *Harvard Business Review* (January-February 1993), Alan Webber said that in the new economy, conversations are the most important form of work. He said, "Conversations are the way knowledge workers discover what they know, share it with their colleagues, and in the process create new knowledge for the organization."

A benchmark 1999 study on "Creating Knowledge Sharing Culture" by the American Productivity and Quality Center noted that in "best-practice" organizations, knowledge sharing is tightly linked to a core cultural value of the organization. In addition, the style of the knowledge-sharing approach closely matches the style of the organization as a whole. There is strong man-

agement and peer pressure for people to help each other and collaborate.

CERL's culture encourages teaming and knowledge sharing across branches and divisions. It is common to see water-cooler conversations where people talk about their projects. Because of this, the sharing of knowledge by using the P3L system was easily accepted. The resistance of researchers to enter their resumes and publications into the P3L was not due to an unwillingness to share, it was due to issues such as "what's in it for me," and "I don't want to waste my time." However, when new customers requested help from researchers via the P3L, the researchers were delighted to hear from those customers, and most researchers changed their attitude.

Performance Metrics Needed

Although the benefits of the system are obvious, quantitative data have not been collected. Hard data on the number of successful customer uses, failed customer attempts, expert points of contact obtained, and researchers who found another researcher's product or publication helpful would assist in documenting the system's benefits. When there is concrete data showing the system's benefits, it is much easier to persuade other ERDC laboratories to implement the system. The authors hope that some efforts will be made in collecting persuasive hard data in the near future.

Information Technology Factor

From its initial concept, the P3L system was developed as a Web application. Further, the P3L was to be maintained by the researchers directly, not by a webmaster. Thus, Macromedia ColdFusion server technology was selected as the implementation tool because it allows the system to be database-driven. Updates are accomplished by completing "fill-in-the-blank" forms, and updating the database immediately changes the system.

Recommendations

From this experience, we developed a checklist to follow for life-cycle planning of any KMS. The checklist covers the project from concept and design to implementation and maintenance, considering important KM factors such as business process changes

and cultural transition that an organization will face with a new KMS. The proposed checklist follows:

- Plan for life-cycle management of any KMS because it is critical.
- Obtain top management commitment. It is the most critical factor for successful system implementation and use.
- Allocate appropriate funding for implementation, publicity, user training, and system support. Nothing frustrates users more than a system with bugs that are not fixed in a timely manner.
- Demonstrate to users that the proposed KMS has advantages for them and makes their job easier.
- Train users how to effectively enter appropriate data. Some will want to know only the basics, while others will want a complete explanation. Consider different classes for different types of users. Valid data are essential and ensure that the system will be useful to customers, managers, and researchers.
- Link knowledge sharing to a core cultural value of the organization and match the style of the knowledge-sharing approach to style of the organization as a whole.

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